

## REMARKS

Responsive to the Office Action mailed on December 1, 2006 in the above-referenced application, Applicant respectfully requests amendment of the above-identified application in the manner identified above and that the patent be granted in view of the arguments presented. No new matter has been added by this amendment.

### Present Status of Application

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being obvious over Fan (US 6,807,342) in view of various combinations of Tehrani (US 5,430,574), Pan (US 5,359,683), Pedrotti et al ("Introduction to optics"), Domash (US 2003/0072009), and/or Huang (US 6,263,128).

In this paper, claim 1 is amended to recite that the curved lens and the second collimator define the resonance cavity. Support for this amendment can be found in Figs. 1, 2 and 3 and related portions of the specification as originally filed. For example, in an embodiment of the invention illustrated in Fig. 1, the resonance cavity 32 is defined by the distance between the concave lens 31 of the reflector 30 and the second collimator 20. Claim 6 is amended to correct informalities. New claims 10-11 reciting limitations found previously in claim 1 are added. Claim 12 reciting that the second collimator has a lens surface with a reflective layer is also added. Thus, on entry of this amendment, claims 1-6 and 10-12 remain in the application.

In addition, it is noted that the substitute specification filed on June 15, 2005 contained an error in that both the clean and marked-up copies failed to reflect the preliminary amendment submitted on September 30, 2003 together with the filing of the present application. Therefore, this paper includes an amendment relative to the substitute specification filed on June 15, 2005 in which the preliminary amendment filed on September 30, 2003 is reflected.

Reconsideration of this application is respectfully requested in light of the amendments and the remarks contained below.

Rejections Under 35 U.S.C. 103

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being obvious over Fan in view of various combinations of Tehrani, Pan, Pedrotti et al, Domash, and/or Huang. To the extent that the grounds of the rejections may be applied to the claims now pending in this application, they are respectfully traversed.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

As amended, claim 1 recites a tunable filter with a wide free spectral range, comprising:

a first collimator;

a second collimator with one end opposed to the first collimator; and

a reflector interposed between the first collimator and the second collimator, the reflector comprising a curved lens;

wherein the curved lens and the second collimator define a resonance cavity to determine a resonance frequency.

Applicant submits that whether taken alone or in combination, Fan, Tehrani, Pan, Pedrotti, Domash, and/or Huang fail to teach or suggest a curved lens and a second collimator define a resonance cavity to determine a resonance frequency.

In particular, it is noted that in the Office actions dated May 8, 2006 and Dec. 1, 2006, the Examiner relies on the disclosure in Figs. 2 and 4 of Fan to teach the resonant cavity of claim 1. However, in Fan, a pair of opposed interference filters define the resonance cavity. This is evident both in Figs. 2 and 4 and in the following:

... a Fabry-Perot resonator comprising **a pair of opposed interference filters** each having three or more layers and spaced apart around a Fabry-Perot cavity a distance substantially equal to an integral number of wavelengths of the cavity's resonant

frequency. Input and output optical fibers are coupled to the cavity via the interference filters respectively ... [col. 1, 46-53, emphasis added]

A grounded conductive disk 16 provides an input aperture into the cavity 17 which has a length  $L_c$  which in well-known Fabry-Perot theory determines the resonant frequency or wavelength of the Fabry-Perot device. [col. 2, 17-21]

Thus, the variation of FIG. 4 illustrates a Fabry-Perot device with the cavity 17, but the optical fibers 22<sup>1</sup> and 24<sup>1</sup> have interference filters 18<sup>1</sup> and 19<sup>1</sup> fixed or layered on each end surface of the input and output fibers. [col. 3, 3-6]

More particularly, it is noted that the length  $L_c$  referred to as defining the extent of the cavity extends between interference filters 18 and 19. This is also clearly evident in the description of the characteristics and operation of the cavity found in col. 2, lines 40-65 of Fan.

Applicant further notes that Figs. 2 and 4 of Fan illustrate two separate embodiments. To the extent that Fan is relied upon to teach a certain arrangement, the arrangement must be found entirely in a single of the embodiments or motivation must be shown to modify one of the two embodiments to obtain the arrangement.

Thus, even if the teaching of Fan were modified to include a collimator as allegedly taught by Tehrani at the ends of optical fibers 22 and 24 or 22<sup>1</sup> and 24<sup>1</sup>, the combination would fail to teach or suggest a first collimator, a second collimator, and a reflector interposed between the first collimator and the second collimator, the reflector comprising a curved lens, wherein the curved lens and the second collimator define a resonance cavity to determine a resonance frequency, as recited in claim 1.

Furthermore, with respect to claim 6, Applicant notes that the Office Action of December 1, 2006 refers to the anti-reflection material 77 in Fig. 7 of Huang, and concludes that "it would have been obvious to one having ordinary skill in the art at the time the invention was made to have an anti-reflection layer be coated on the end of the first collimator, as taught by Huang, in the

tunable filter of Fan ... for the purposes of reducing optical noise due to unwanted back reflections in the incident signal." Combining the teaching of Huang and Fig. 4 of Fan, an anti-reflection layer would presumably be coated over the surface of interference filter 18'. However, forming an anti-reflection layer over the interference filter 18' would conflict with the operation of the device. In this regard, if proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Also see MPEP 2143.01.

It is therefore Applicant's belief that a *prima facie* case of obviousness cannot be established in connection with claims 1 and 6. Furthermore, as it is Applicant's belief that a *prima facie* case of obviousness is not established for claim 1, the Examiner's arguments in regard to the dependent claims are considered moot and are not addressed here. Allowance of claims 2-5 and 10-12 is respectfully requested.

#### Conclusion

The Applicant believes that the application is now in condition for allowance and respectfully requests so. The Commissioner is authorized to charge any additional fees that may be required or credit overpayment to Deposit Account No. **502447**.

Respectfully submitted,

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